



Tronox NAUM

Proposed Mine Evaluation Risk Factors

December 14, 2017 Version – Reflects input from Tronox
Stakeholders and Federal AUM Partners

Objectives



- Develop a prioritization methodology within the framework of the National Contingency Plan
- Develop and implement a methodology to evaluate all Tronox AUMs based on a common set of site characteristic and risk factors to help guide decisions regarding the expenditure of Tronox resources.
- ✓ Incorporate stakeholder input on proposed risk factors and solicit input on other factors to consider.

Overview of the Factors



- Common set of site risk factors to rank sites and guide decisions related to cleanup strategies and timing.
- Pull from prior factors developed by both regions, including *Mine Category Assessment Protocol* (MCAP).
- Scoring Scenarios identified for each factor
- Factors will be scored based on final RSEs.
- Factors other than risk will also be used to guide decisions related to cleanup strategies and timing.

Factors that Inform Risk

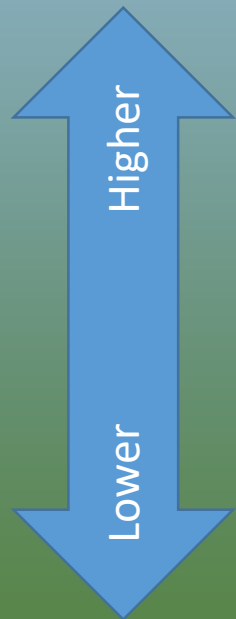


- Radiation Level Above Background
- Waste Material Characteristics
- Migration to Surface Water
- Land-use Scenario
- Accessibility
- Reclamation Status
- Impacts to Ground Water
- Surface Area of Contamination

Radiation Level Above Background



- Radiation level above site specific background based on surface scan



Greater than 100 X Above Background

10-100 X Above Background

2-10 X Above Background

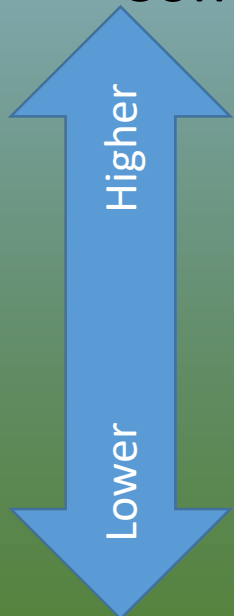
Less than 2 X Above Background

At Background level

Waste Material Characteristics



- Mobility potential of waste material to the surface water, ground water, and air, based on structure/texture of affected media, using the ϕ /phi standard
- Composite Score of Site



High mobility (fine) > 1 acre (8 to -1 ϕ)

High mobility (fine) < 1 acre (8 to -1 ϕ)

Moderate mobility (-1 to -6 ϕ)

Low mobility (-6 to -1 ϕ)

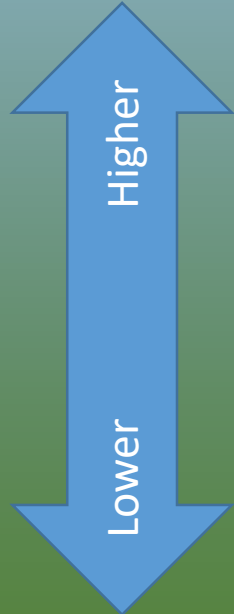
None



Migration to Surface Water



- Known or potential of contaminated material migrating off-site into a known surface water body (perennial or ephemeral) from a onsite water source or proximity of mobile material to surface water



Surface water flowing through the site or mine waste located in a surface water body

Likely (mobile material or surface water within 200 foot)

Potential (surface water within 0.25 miles)

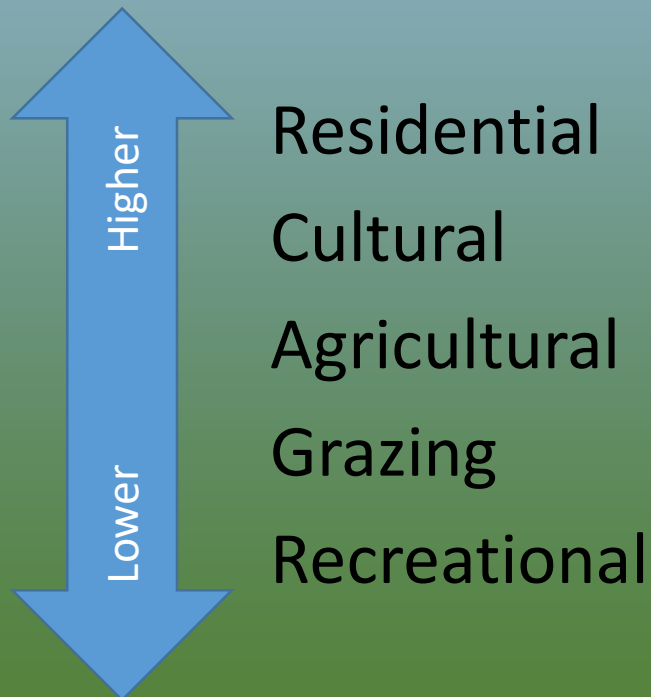
Unlikely (based on distance and material)

None

Land-use Scenario



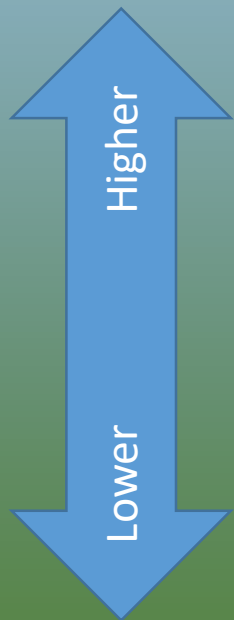
- Potential for the public to live or visit the site for non-residential purposes, such as cultural, recreational, agricultural, or grazing.



Accessibility



- Ease of gaining access to the site



Mine is readily accessible from a maintained road using a standard two-wheel drive passenger vehicle or by walking

Not accessible by standard two-wheel drive passenger vehicle; accessible by four-wheel drive vehicle or a utility task vehicle

Mine is inaccessible to a four-wheel drive vehicle or a utility task vehicle

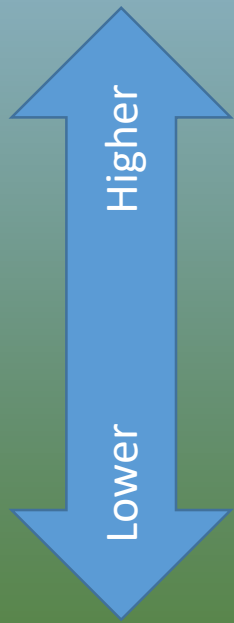
Mine access requires a moderate hike across relatively flat terrain of less than 1 mile

Mine access requires a hard hike (e.g. heavy vegetation, grade greater than 10% slope, no defined trail, etc.) of greater than 1 mile to access the mine

Reclamation Status



- Condition of any historical mine reclamation



Un-reclaimed

Reclamation deteriorating

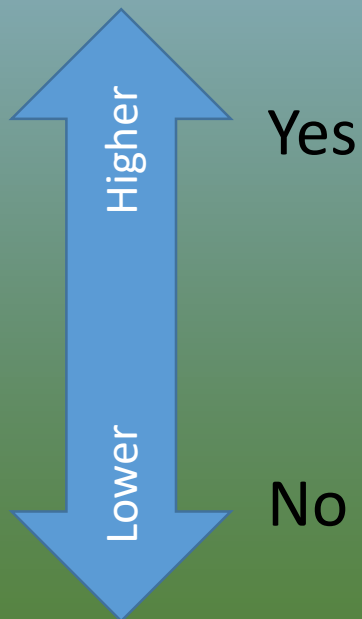
Reclamation performed/status unknown (waste inaccessible)

Reclamation action stable/effective

Impact to Ground Water



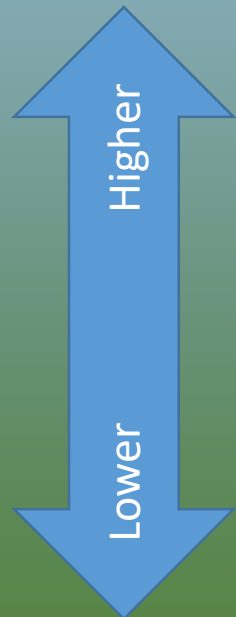
- Ground water impacted by water flowing through the mine working or infiltration through the mine or historic mine water discharge to surface that recharged ground water aquifer(s) used for drinking water





Surface Area of Impacted Material

- Estimated surface area (including bore holes and vent shafts) of significantly impacted soils and waste material



Greater than 40 acres

20 to 40 acres

10 to 20 acres

Less than 10 acres

None